

Aspects of matching exercise to sports injured individuals

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Objectives:

1. Discussion of the importance of the base sciences (anatomy, physiology, neurophysiology, and kinesiology) in determining exercise program for those suffering from sports injuries
2. Examination of the scientific foundation of physical training methods (Plyometric training, Proprioceptive training, endurance training) and making them suitable for sufferers of musculoskeletal injuries
3. Discussion of typical errors in physical education programs in the context of preventing injuries
4. Construction of a training program for those suffering from common sports injuries, such as a partial tendon tear, stress fractures, ankle dislocation, herniated disc, and more

Short Course Description:

The course will include 14 sessions, each addressing a specific topic. The course will be taught in class and will be accompanied by online materials and quizzes for rehearsal and self-evaluation outside of class. In addition to the availability of the on-line modules, study materials will be discussed and exercised in class sessions.

Course Program:

1. General: Creating exercise programs, injury prevention and surveillance programs for musculoskeletal injuries
2. Identifying risk factors for injuries among athletes in different sports
3. How to perform screening tests for athletes
4. Anatomy, Kinesiology and Biomechanics of connective tissue, muscle tissue and bone tissue
5. Principles and methods for constructing a training program to increase the range of motion of those suffering from sports specific injuries
6. Stress fractures: etiology and methods of diagnosis
7. Nutrition as a way to prevent stress fractures
8. Hydrotherapy for rehabilitation and treatment of stress fractures
9. The relationship between proper nutrition and stress fractures
10. Eccentric training and rehabilitation of tendon inflammation - such as Achilles tendonitis
11. What is the meaning of tendon rupture?
12. Review of the mechanism of inflammation
13. What are the objectives of eccentric training (general)? How eccentric training contributes to the healing process

14. Matching an exercise program for overuse injuries (such as tendonitis), traumatic injuries (eg, sprained ankle), and nerve damage
15. Endurance training: purpose of warm-ups and cool down, the effect of aerobic exercise on spine and skeletal axis functioning, aerobic exercise as a treatment of injuries
16. The knee joint: risk factors for knee injuries. The relationship between range of motion and strength of adjacent joints (hip, ankle) to knee injuries
17. Strength training: isometric, eccentric, concentric, plyometric, neuromuscular and proprioceptive training principles; choosing the appropriate type of strength training for specific injuries
18. Close vs open kinematic chain for rehabilitation from injuries

Students' Workload

30 contact hours + home workload 5 ECTs

Student's Obligations:

1. To attend the first and two last meetings, which will be held in the classroom.
2. To attend all other sessions online through the course website. The lessons will be based on the materials submitted by the instructor and discussion of scientific papers (required readings).
3. The student is required to access Moodle on a weekly basis. The assignments should be sent via Moodle before the date specified for each task and assignment.
4. To submit short assignments within the same day (up to an hour and a half of work and study-class time). assignments to be handed in within a longer time period of about a week.
5. To submit longer assignments within approximately one week

Assessment Criteria:

1. 60% final examination
2. 20% written paper about a research study
3. 20% online assignments and quizzes

References: